

Date: Wednesday, 11/06/2008 8:40:56 AM  
 User: Julie Lecocq

## Process Sheet

<b>Customer</b> :	CU-DAR001 Dart Helicopters Services	<b>Drawing Name</b> :	407 FWD X-TUBE, TURNING DETAIL
<b>Job Number</b> :	39815		
<b>Estimate Number</b> :	13204		
<b>P.O. Number</b> :		<b>Part Number</b> :	D407667105TRN
<b>This Issue</b> :	11/06/2008	<b>S.O. No.</b> :	
<b>Prsht Rev.</b> :	NC	<b>Drawing Number</b> :	D407-667-145 REV B
<b>First Issue</b> :	/ /	<b>Project Number</b> :	N/A
<b>Previous Run</b> :	39814	<b>Drawing Revision</b> :	B
	<b>Type</b> :	<b>Material</b> :	
	CROSSTUBES	<b>Due Date</b> :	18/06/2008
<b>Written By</b> :		<b>Qty:</b>	1
<b>Checked &amp; Approved By</b> :	JUD 08.06.10.	<b>Um:</b>	Each
<b>Comment</b> :	Est Rev:a 08.02.28 new issue EC Est Rev B 08.04.02 Removed polish EC verified by: DD		

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	D6010115	Crosstube Material
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**Comment:** Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D6010-115 Crosstube B32308

Check OD = 2.250"; ID = 1.610"

A.m 08.06.19 ①

2.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
-----	------------	----------------------------

**Comment:** MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand &amp; install plugs DT8673 on both ends as per Folio FA249

2-Turn first side as per Folio FA249

3- File transition lines smooth.

A.m 08.06.19 ①

3.0	QC1	INSPECT ALL DIM TO DIM SHEET
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**Comment:** INSPECT ALL DIM TO DIM SHEET

A.m 08.06.19 ①

4.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
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**Comment:** MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA249

2- File transition lines smooth.

3-Remove sand and plugs

A.m 08.06.19 ①



Date: Wednesday, 11/06/2008 8:40:56 AM  
User: Julie Lecocq

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 FWD X-TUBE, TURNING DETAIL

Job Number: 39815

Part Number: D407667105TRN

Job Number:



Seq. #:

Machine Or Operation:

Description :

4-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-145  
Inside of Cuff(Do not engrave on outside of tube)

Q.m 08-06-19 ①

5.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

Q.m 08-06-19 ①

6.0

QC8

SECOND CHECK



Comment: SECOND CHECK

SL 08/06/19 ②

7.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

SL 8-6-19

8.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

DP 8-6-19

9.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and stock in Kanban rack

Location: X tube cell

SL 8-6-19

10.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/06/24 JF

Job Completion



mf 08-06-23



<b>DART AEROSPACE LTD</b>		<b>Work Order:</b> 39815
<b>Description:</b> Crosstube Assembly		<b>Part Number:</b> D407-667-145
<b>Inspection Dwg:</b> D407-667-145 <b>Rev:</b> B		<b>Page 1 of 1</b>

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.241	✓			
	1.865	+0.005/-0.000	1.870	✓			
	1.878	+0.005/-0.000	1.883	✓			
	1.970	+0.005/-0.000	1.972	✓			
	2.030	+0.005/-0.000	2.030	✓			
	2.165	+0.005/-0.000	2.164	✓			
	0.125	+/-0.010	0.125	✓			
	R0.063	+/-0.010	R0.063	✓			
	R0.500	+/-0.010	R0.500	✓			
	R0.063	+/-0.010	R0.063	✓			
	4.438	+/-0.010	4.438	✓			
SIDE B	2.240	+0.005/-0.000	2.240	✓			
	1.865	+0.005/-0.000	1.865	✓			
	1.878	+0.005/-0.000	1.882	✓			
	1.970	+0.005/-0.000	1.970	✓			
	2.030	+0.005/-0.000	2.030	✓			
	2.165	+0.005/-0.000	2.164	✓			
	0.125	+/-0.010	0.125	✓			
	R0.063	+/-0.010	R0.063	✓			
	R0.500	+/-0.010	R0.500	✓			
	R0.063	+/-0.010	R0.063	✓			
	4.438	+/-0.010	4.438	✓			
	113.20	+/-0.020	113.200	✓			

<b>Measured by:</b> am	<b>Audited by:</b> [Signature]	<b>Prototype Approval:</b>	N/A
<b>Date:</b> 03-06-19	<b>Date:</b> 03/06/19	<b>Date:</b>	N/A

Rev	Date	Change	Revised by	Approved
A	04.04.21	New Issue (P/O D407-667-105)	KJ/RF	
B	06.03.09	Dwg Rev updated	KJ/JLM	[Signature]

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN PH	DRAWN BY PH	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED DS	APPROVED DS	DRAWING NO. D407-667-145	REV. B SHEET 1 OF 3
DATE 05.07.26		TITLE CROSSTUBE ASS'Y (407 HIGH FWD) NTS	
A	02.05.08	NEW ISSUE	
B	05.07.26	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	

RELEASED  
05.07.26

**UNDER REVIEW**  
06.08.10  
re-draw detail

Qty	Part Number	Description
X	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
1	D6010-115	CROSSTUBE
2	D2856-400-694	ABRASION STRIP
2	D2873-043	NUT PLATE
2	D2873-045	NUT PLATE
2	D2891-1	SUPPORT
14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
4	MS21920-20	CLAMP

SHOP COPY

#### GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6010-115  
FINISHED LENGTH = 113.20±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-694 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2891-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) SEAL EDGES OF SUPPORTS AND ABRASION STRIP USING SIKAFLEX-241/291 SEALANT (OPTIONAL).
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

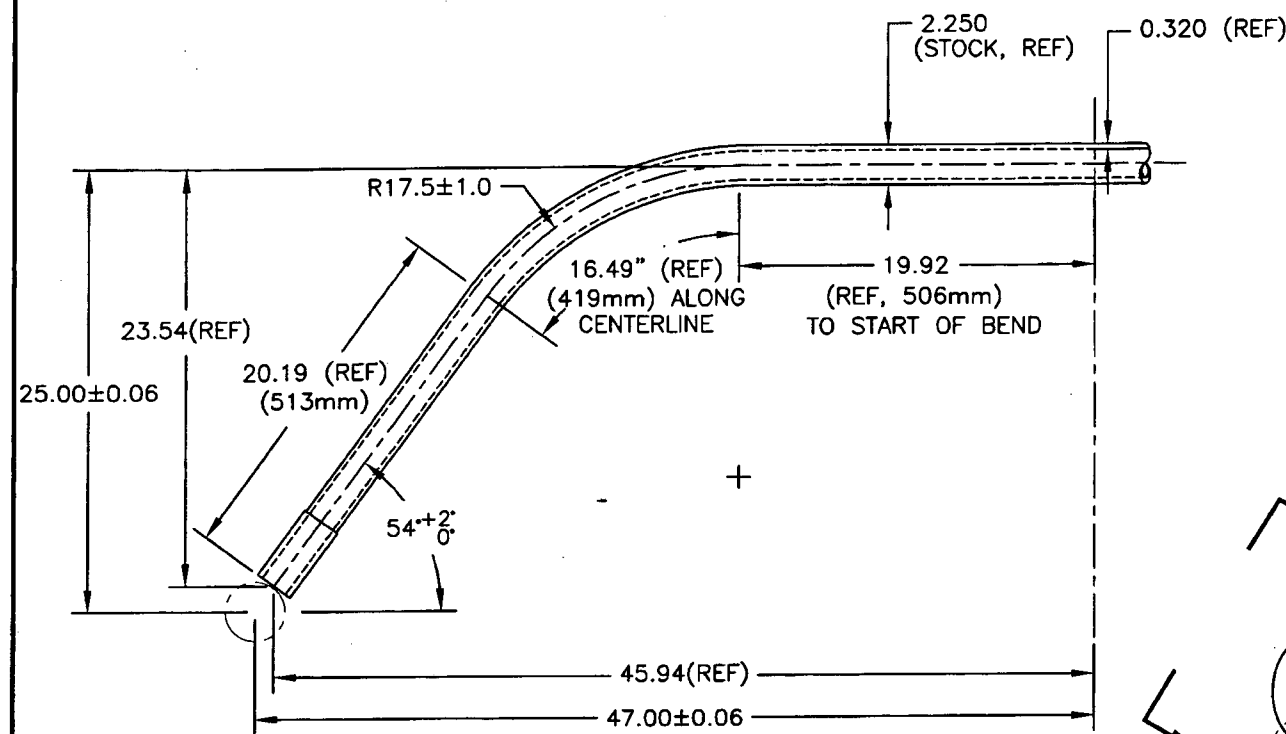
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

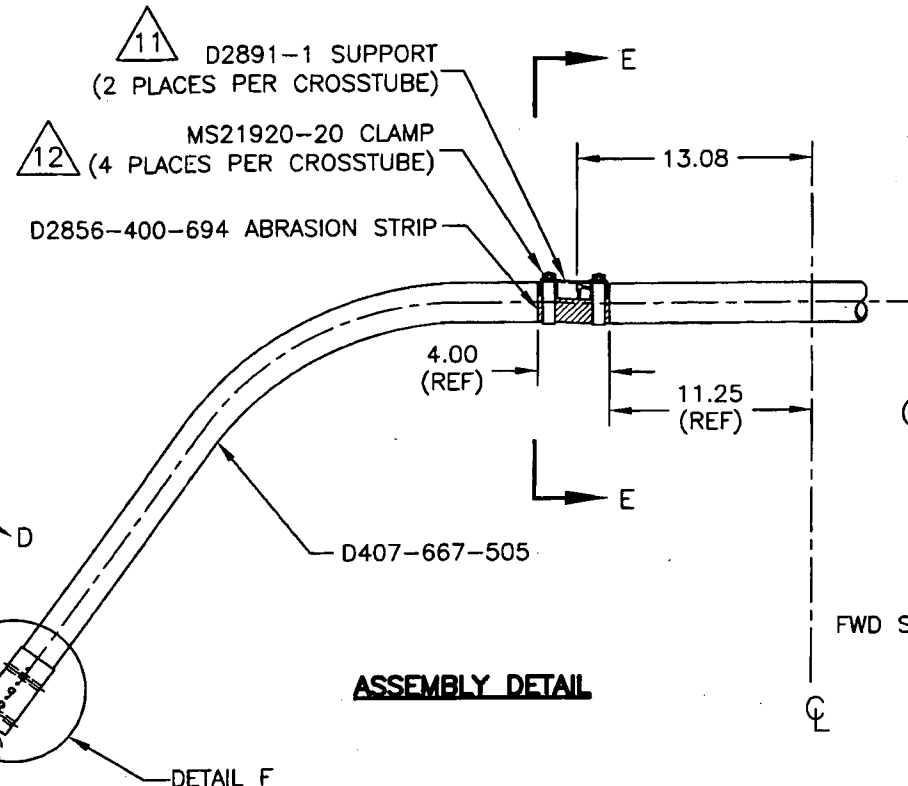
**NOTE:** Date & initial all entries





**BENDING DETAIL**

6



**ASSEMBLY DETAIL**

11 D2891-1 SUPPORT  
(2 PLACES PER CROSSTUBE)

12 MS21920-20 CLAMP  
(4 PLACES PER CROSSTUBE)

D2856-400-694 ABRASION STRIP

13.08

4.00 (REF)

11.25 (REF)

D407-667-505

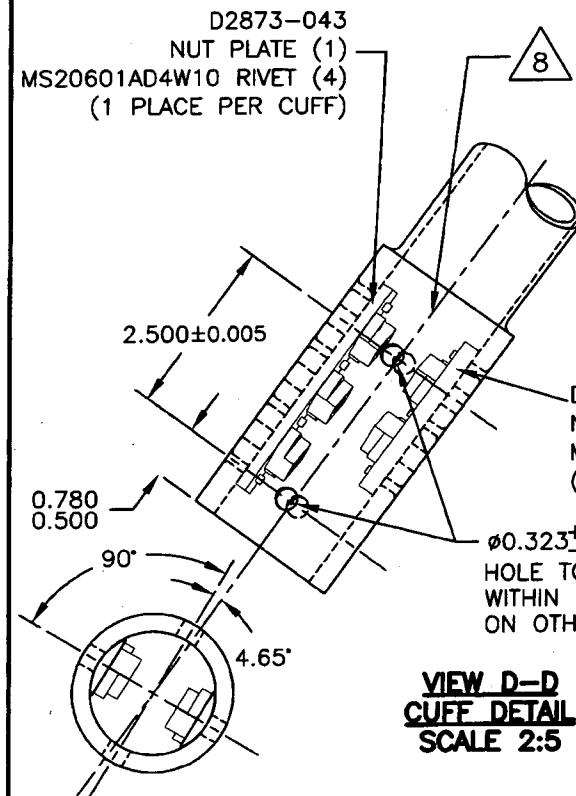
DETAIL F

PILOT Ø0.128  
C'SINK Ø0.225X100"  
(TYP 7 PLACES PER CUFF)

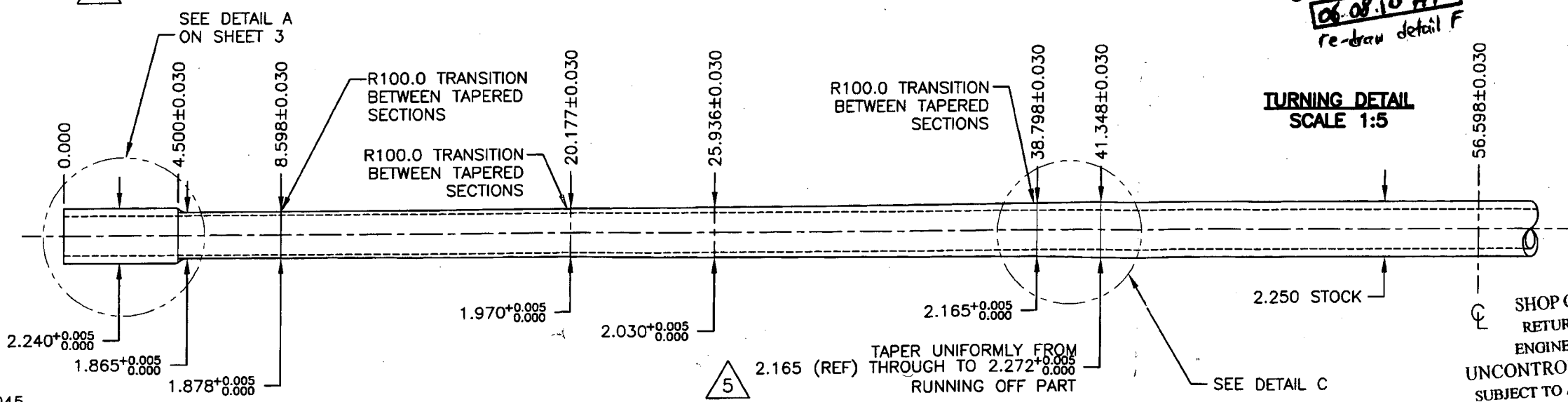
FWD SIDE ONLY

**DETAIL F**  
SCALE 2:5

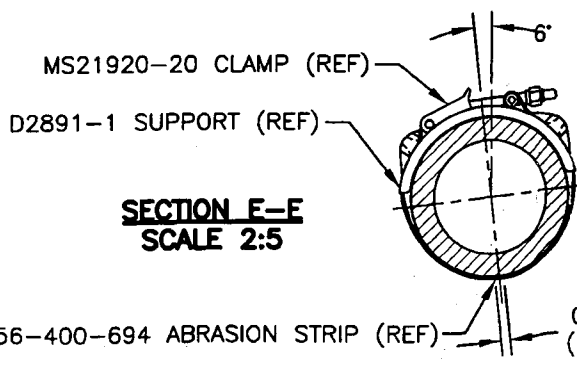
**UNDER REVIEW**  
06.08.10 PH  
re-draw detail F



**VIEW D-D**  
**CUFF DETAIL**  
SCALE 2:5



**TURNING DETAIL**  
SCALE 1:5



**SECTION E-E**  
SCALE 2:5

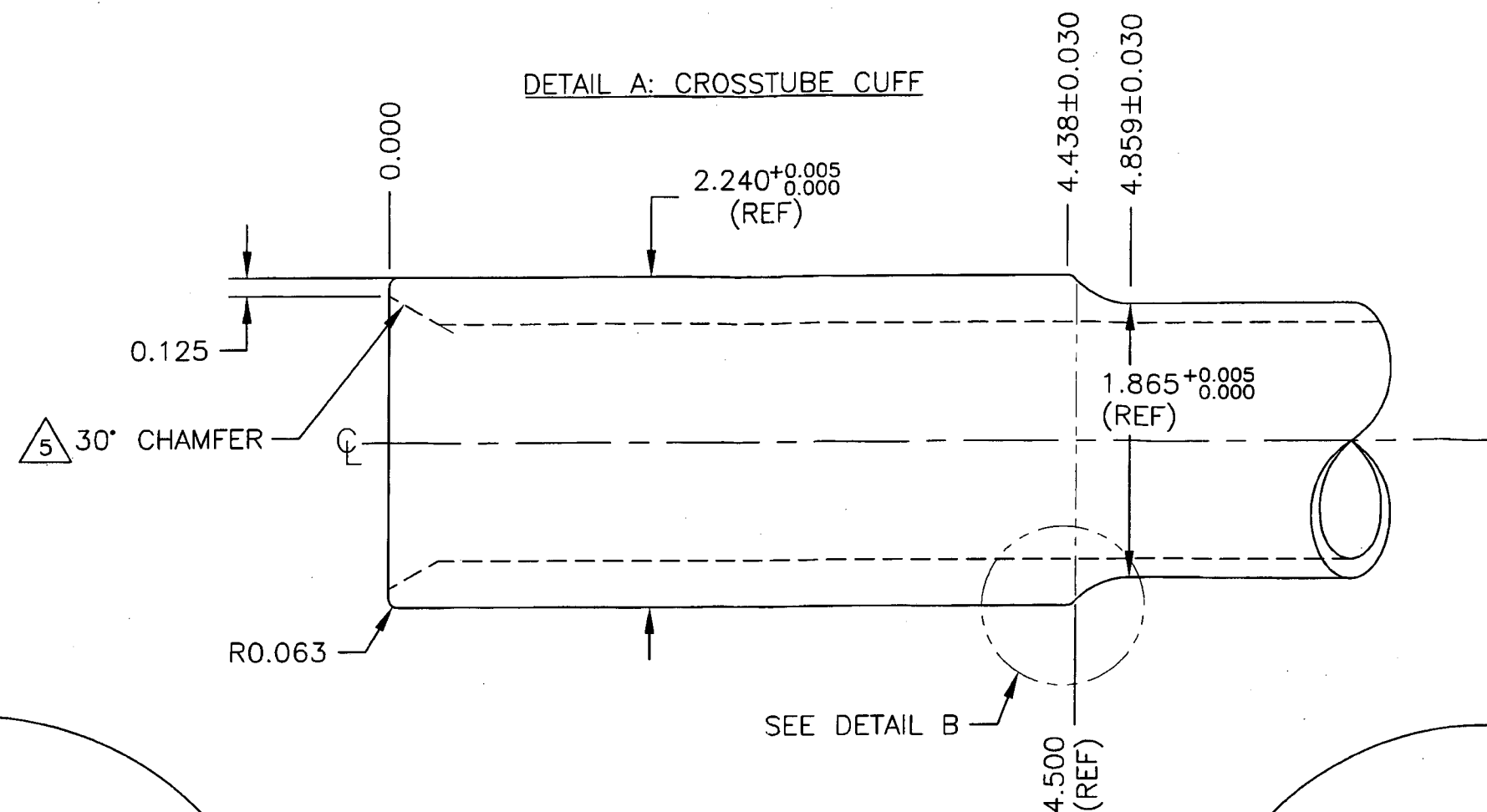
9 D2856-400-694 ABRASION STRIP (REF)

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**RELEASED**  
05.07.26

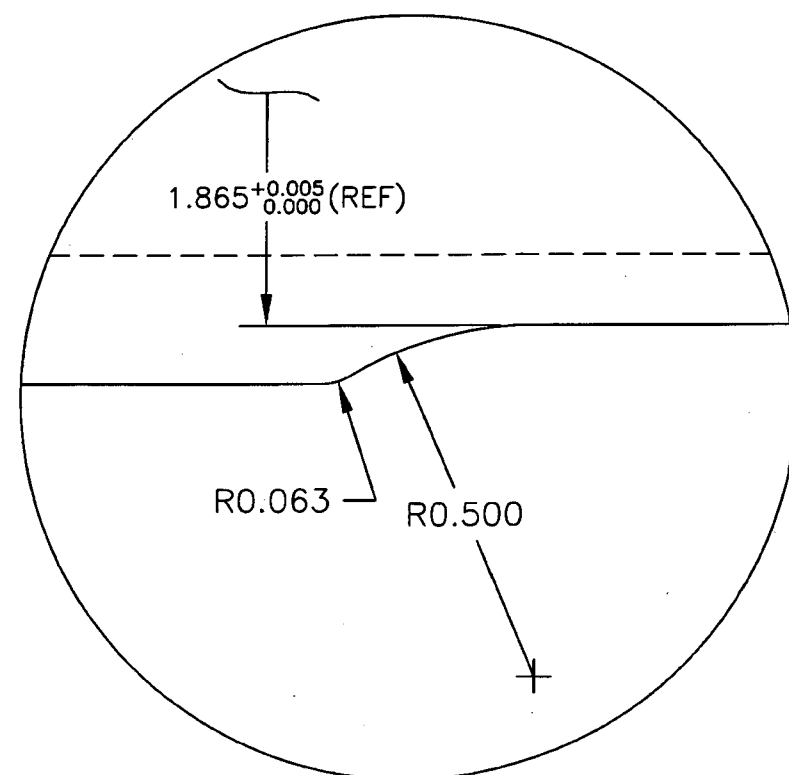
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DATE 05.07.26		TITLE CROSSTUBE ASS'Y (407 HIGH FWD)		SCALE 1:10	



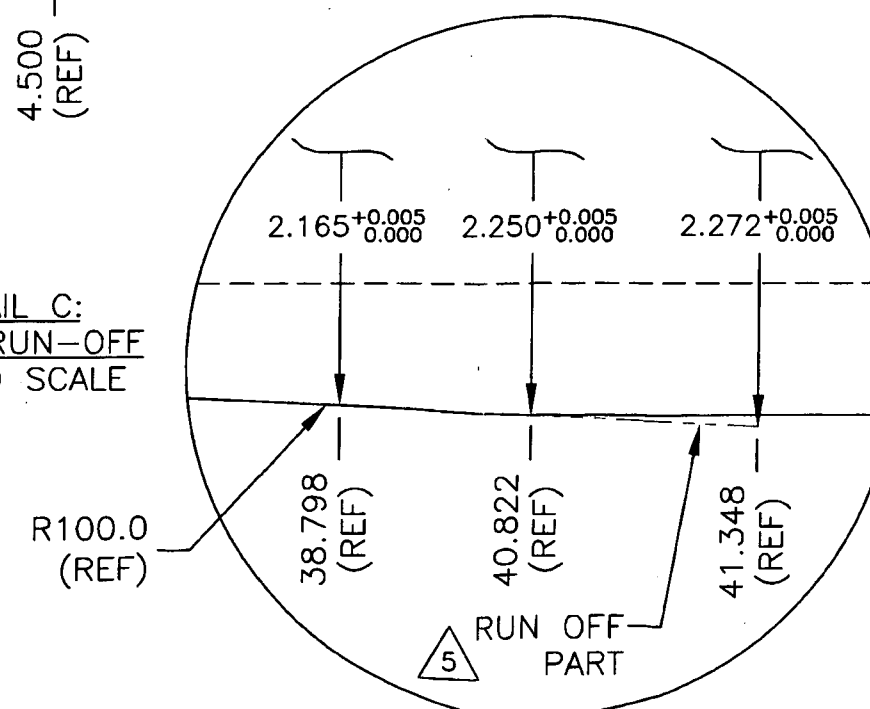


UNDER REVIEW  
06.08.10 PH  
re-draw detail F

RELEASED  
05.07.26



DETAIL C:  
TAPER RUN-OFF  
NOT TO SCALE



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CHECKED DS	APPROVED DS	DRAWING NO. D407-667-145	REV. B SHEET 3 OF 3
DATE 05.07.26	TITLE CROSSTUBE ASS'Y (407 HIGH FWD)	SCALE 1:1	

